CHAPTER 9: PAPER JAM

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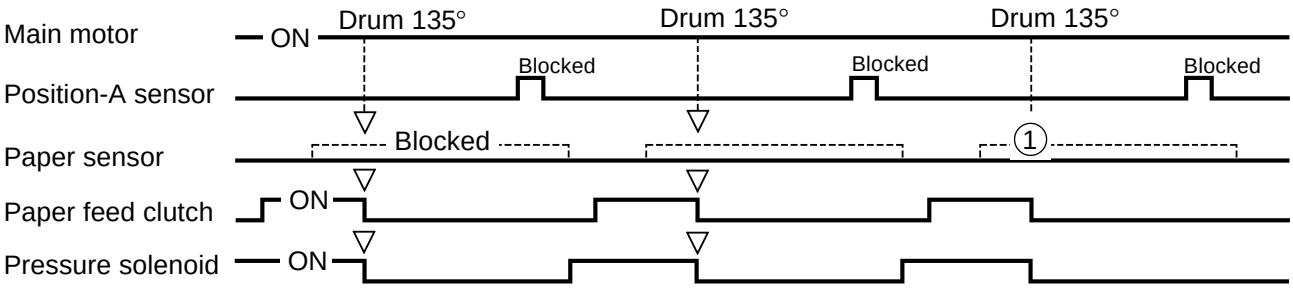
1. Theory of Operation

1. Paper Jam at First Paper Feed Area

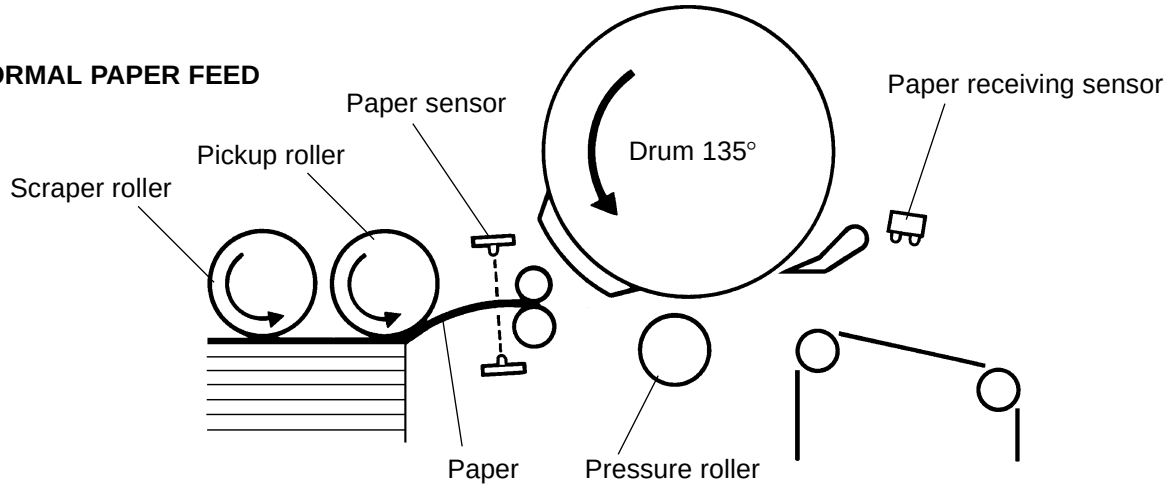
1. Paper Sensor

- Paper sensor checks for paper every time the Drum makes 135° turn from the Position-A during printing.
- If the Paper sensor does not detect paper within the third Drum rotation, the machine assumes paper has jammed at the Fist paper feed area and displays message **[C 33]**.

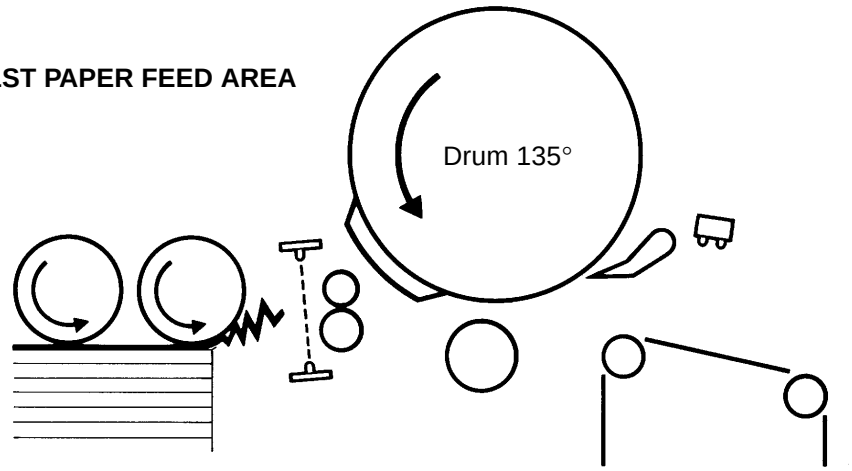


① The Paper sensor does not detect any paper within the third Drum rotation and displays **[C 33]**.

NORMAL PAPER FEED



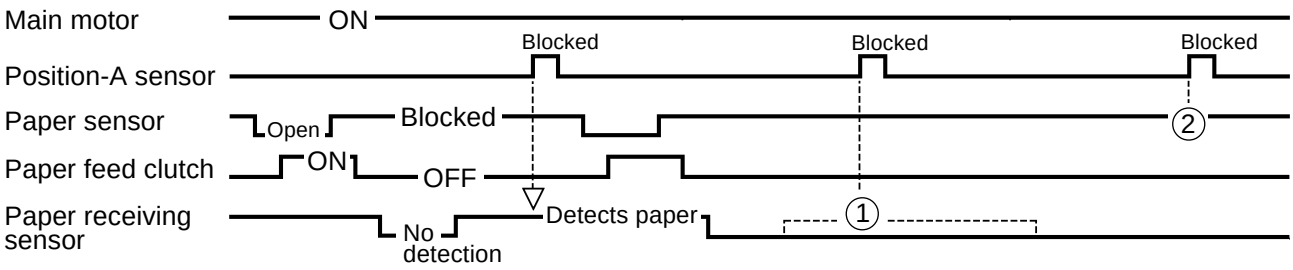
PAPER JAM AT 1ST PAPER FEED AREA



2. Paper Jam at Second Paper Feed Area

1. Paper Sensor and Paper Receiving Sensor

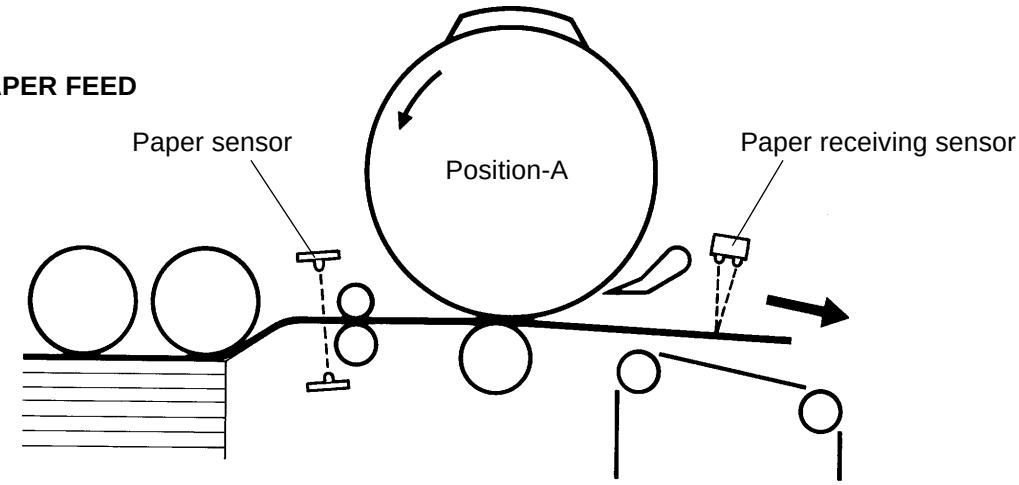
- Paper receiving sensor checks for paper during printing the operation.
- If Paper receiving sensor does not detect any paper, the machine immediately stops the next paper feed, and if the Paper sensor is still detecting a paper at next Drum position-A, the machine assumes paper has jammed at the Second paper feed area and displays the message **[C 31]**.



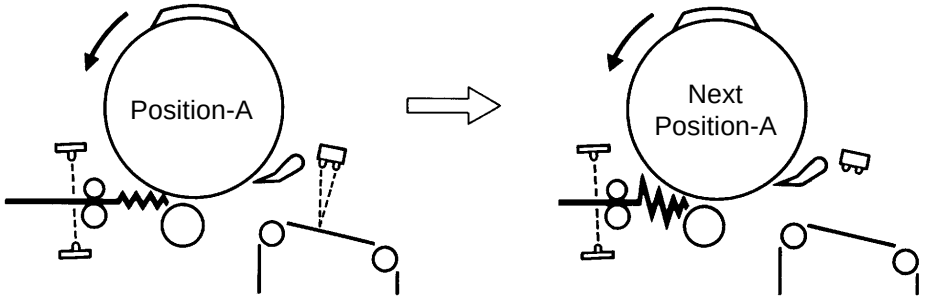
① The Paper receiving sensor does not detect paper.

② The Paper sensor is detecting paper, therefore the machine assumes paper has jammed at the Second paper feed area and displays the message **[C 31]**.

NORMAL PAPER FEED



PAPER JAM AT 2ND PAPER FEED AREA



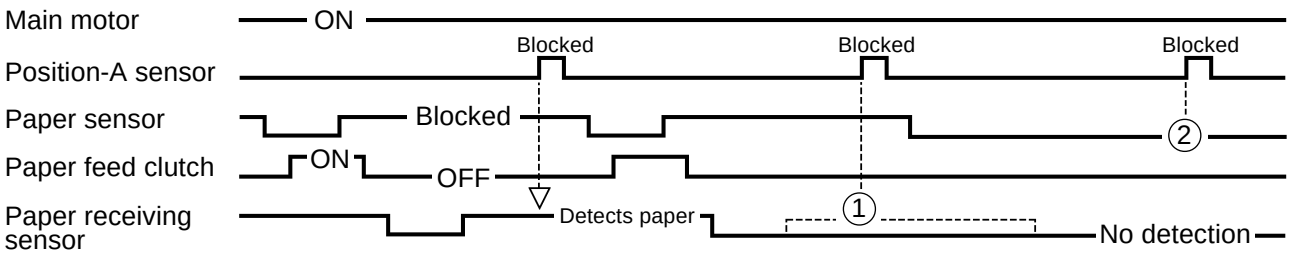
Paper receiving sensor does not detect paper at Drum position-A.

Paper sensor is detecting paper at next Drum position-A.

3. Paper Jam on the Drum

1. Paper Sensor and Paper Receiving Sensor

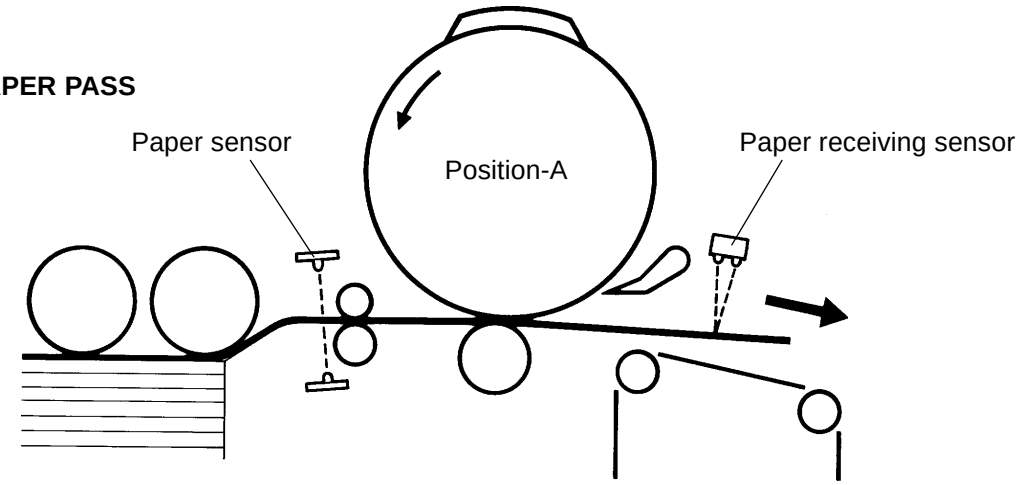
- Paper receiving sensor checks for paper during printing the operation.
- If Paper receiving sensor does not detect any paper, the machine immediately stops the next paper feed, and if the Paper sensor is not detecting a paper at next Drum position-A, the machine assumes paper has jammed on the Drum and displays the message **[C 34]**.



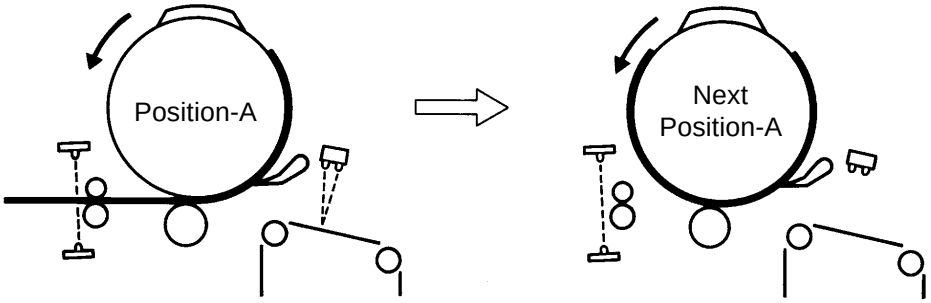
① The Paper receiving sensor does not detect paper.

② The Paper sensor is not detecting paper, therefore the machine assumes paper has jammed on the Drum and displays the message **[C 34]**.

NORMAL PAPER PASS



PAPER JAM ON THE DURM



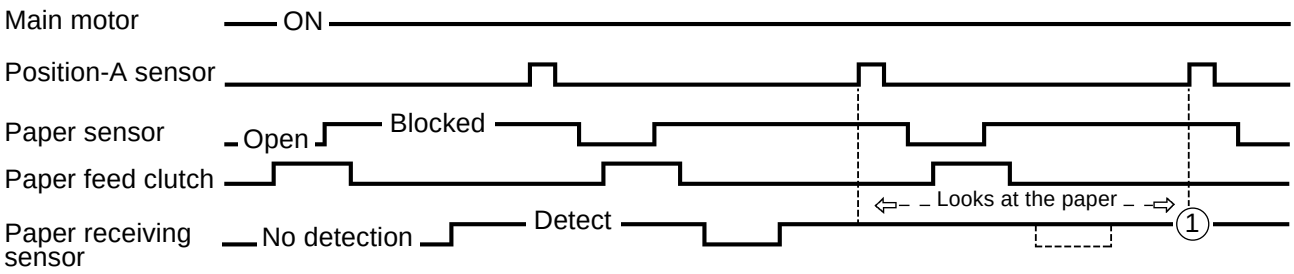
Paper receiving sensor does not detect paper at Drum position-A.

Paper sensor is not detecting paper at next Drum position-A.

4. Paper Jam at Paper Receiving Area

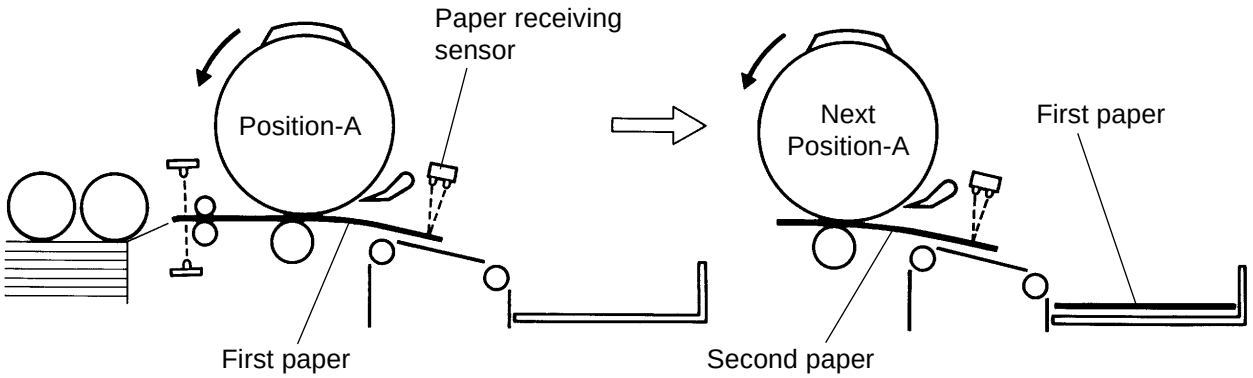
1. Paper Receiving Sensor

- Paper receiving sensor checks for paper during the printing operation.
- If paper detection by Paper receiving sensor does not change from detecting to not detecting within one rotation of the Drum from one Drum position-A to the next, the machine assumes paper has jammed at the Paper receiving area and displays message **[C 32]**.

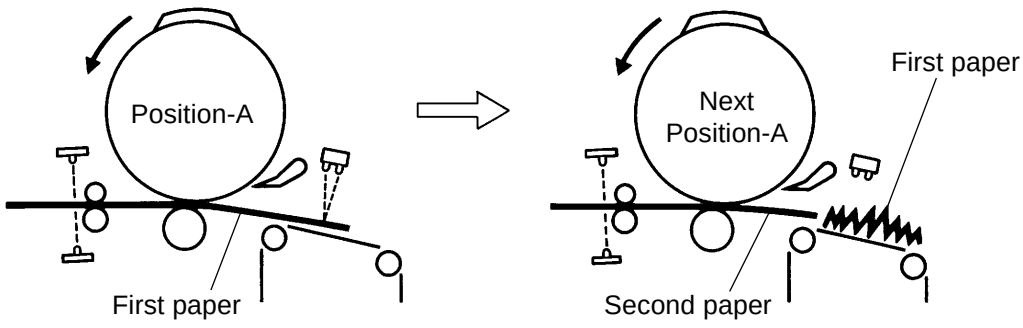


① Paper receiving sensor does not change from detect to no detect within one rotation of the Drum from one Drum position-A to the next. The machine assumes paper has jammed at the Paper receiving area and displays message **[C 32]**.

NORMAL PAPER DISCHARGE

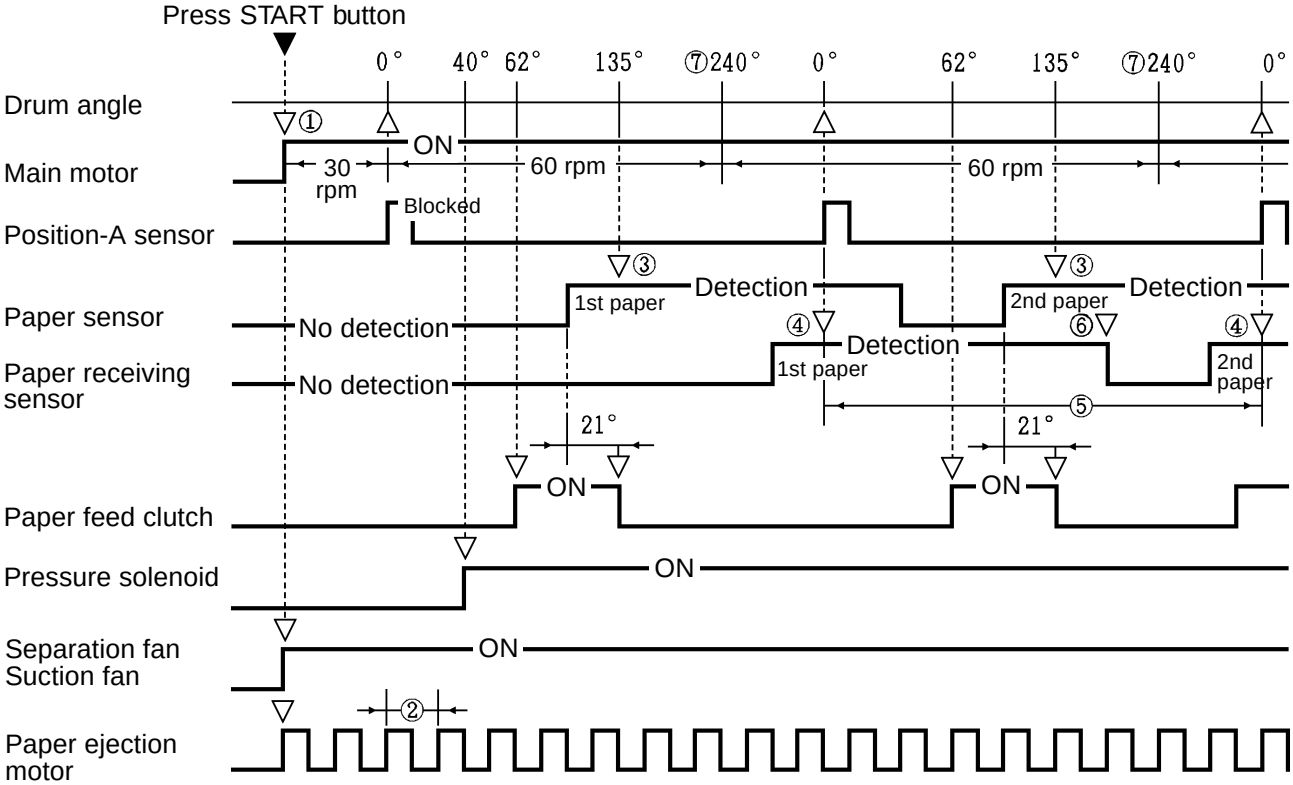


PAPER JAM AT PAPER RECEIVING AREA



Paper does not escape from Paper receiving sensor from one Drum position-A to the next.

5. Printing Start Timing Chart



① If presence of master on the Drum is not checked, the "Master on Drum (in printing) Check" is done before the machine starts printing.
If the actuator of the elevator Upper limit sensor is not pressed, the Paper feed tray is elevated before the printing starts.

② The ON and OFF intervals of the Paper ejection motor change in accordance with the printing speed, which in turn determines the speed of the Transfer belts on the Suction unit.

Main motor speed (Printing Speed)	60 rpm	90 rpm	130 rpm
Paper ejection motor ON interval	20 ms	10 ms	20 ms
Paper ejection motor OFF interval	30 ms	10 ms	10 ms

③ If the light path of the Paper sensor is not blocked (no paper detected) at Drum angle 135°, the Pressure solenoid and Paper feed clutch is turned OFF.
If the light path of the Paper sensor is not blocked within 3 rotations of the Drum, the machine assumes paper has jammed at first paper feed area and indicates the message **[C 33]**.

④ If the Paper receiving sensor does not detect paper when the Drum is at position-A, the machine assumes paper has jammed at second paper feed area or on the Drum and indicates the message **[C 31]** when paper is jammed at 2nd paper feed area, or **[C 34]** when paper is jammed on the Drum.

⑤ If the Paper receiving sensor keeps detecting a paper from one Drum position-A to the next, the machine assumes paper has jammed at paper receiving area and indicates the message **[C 32]**.

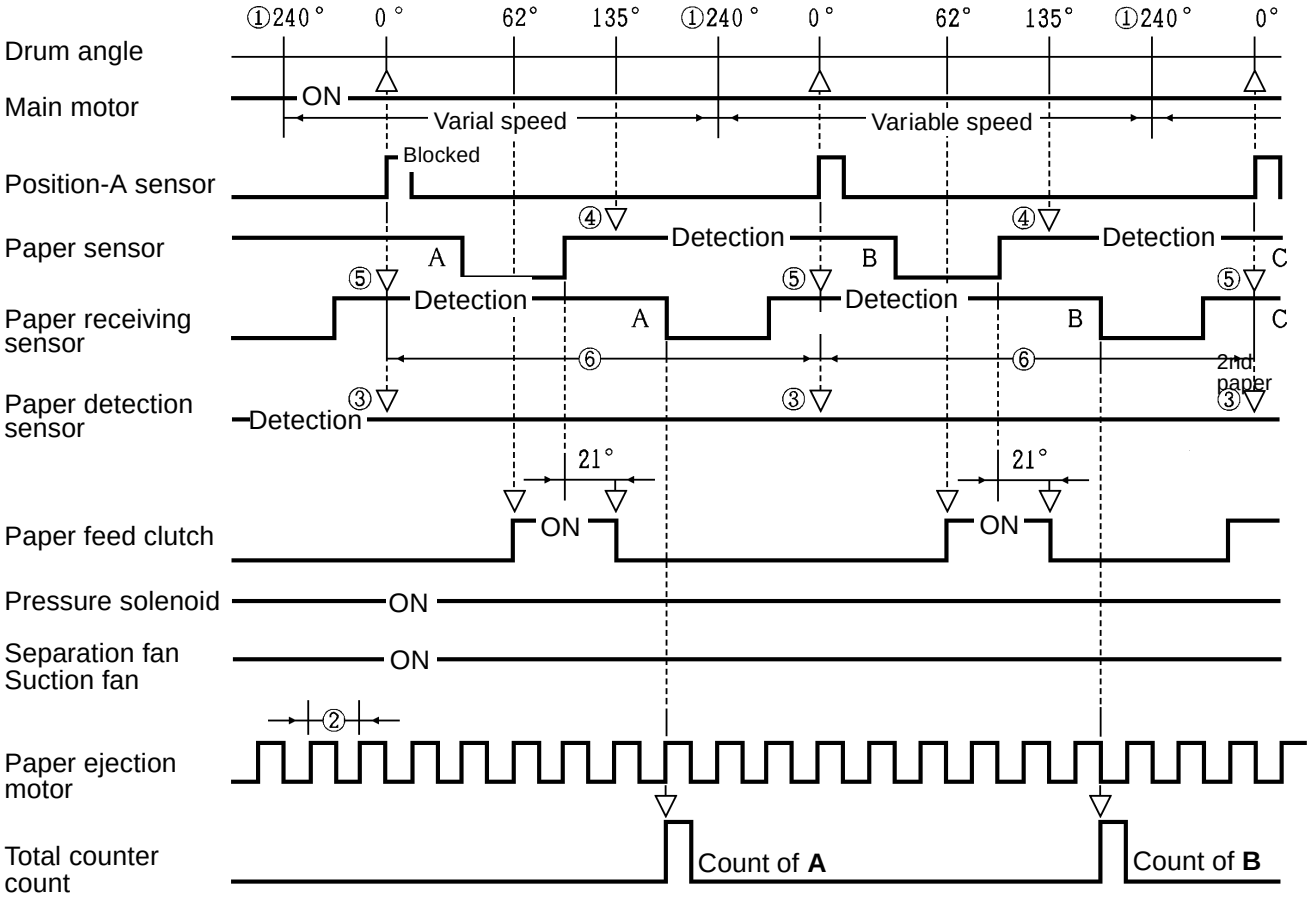
⑥ The "Total Counter" advances one count when the Paper receiving sensor changes from detecting to non-detecting.

⑦ The printing speed increases gradually in following manner at each Drum 240° position after the START button is pressed.

First 240°	Second 240°	Third 240°	Fourth 240°	Fifth 240°
60 rpm	60 rpm	90 rpm	110 rpm	130 rpm

This is a sample when printing speed is selected to 130 rpm.

6. During the Printing Timing Chart



① The printing speed is changed when the Drum angle is 240°.
The possible speed selections are: 60 rpm, 90 rpm, or 130 rpm.

② The ON and OFF intervals of the Paper ejection motor change in accordance with the printing speed, which in turn determines the speed of the Transfer belts on the Suction unit.

Main motor speed (Printing Speed)	60 rpm	90 rpm	130 rpm
Paper ejection motor ON interval	20 ms	10 ms	20 ms
Paper ejection motor OFF interval	30 ms	10 ms	10 ms

③ If the Paper detection sensor does not detect paper at Drum position-A, the machine assumes paper is not on the Paper feed tray and indicates the message **[C 44]**.

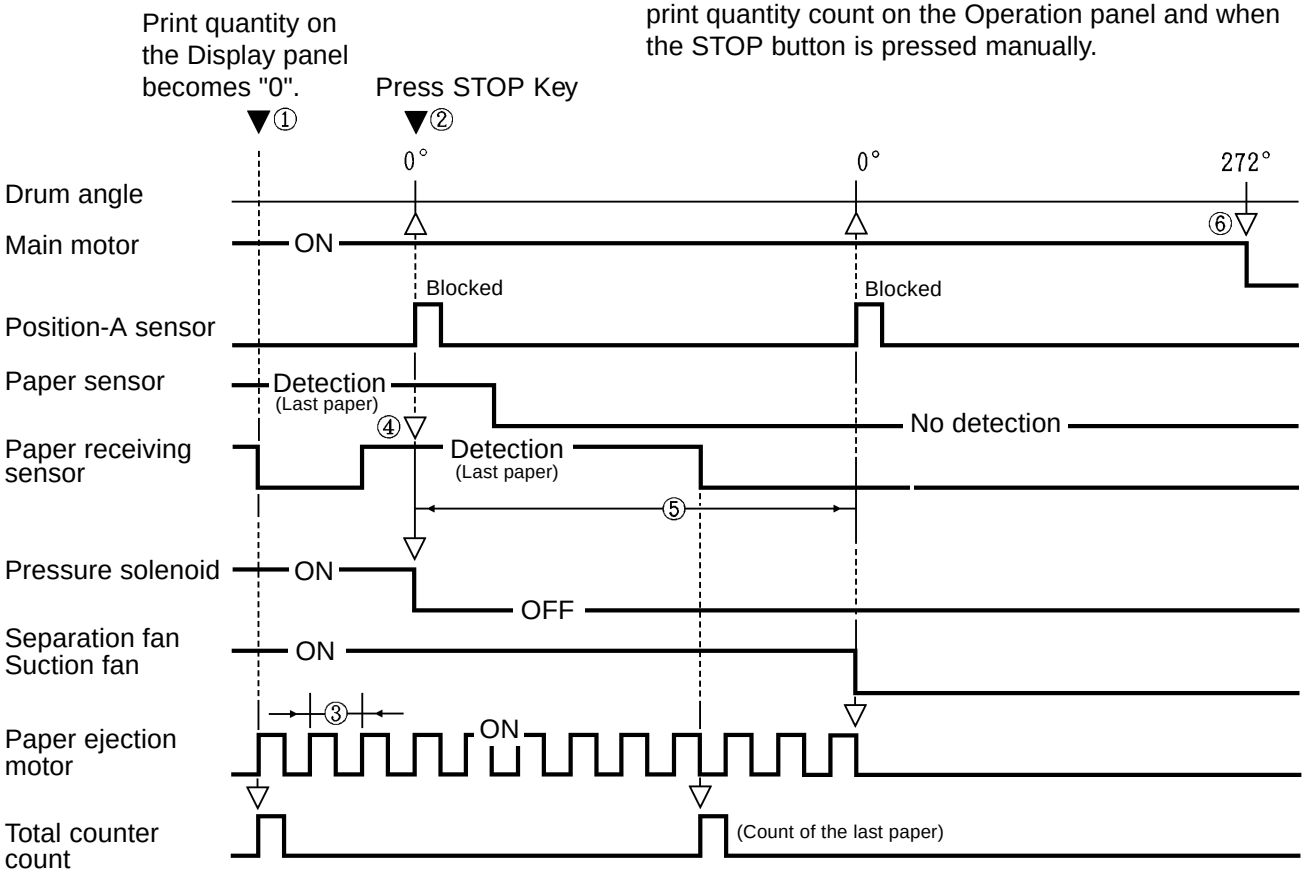
④ If the light path of the Paper sensor is not blocked (no paper detected) at Drum angle 135°, the Pressure solenoid and Paper feed clutch is turned OFF.
If the light path of the Paper sensor is not blocked within 3 rotations of the Drum, the machine assumes paper has jammed at first paper feed area and indicates the message **[C 33]**.

⑤ If the Paper receiving sensor does not detect paper when the Drum is at position-A, the machine assumes paper has jammed at second paper feed area or on the Drum and indicates the message **[C 31]** when paper is jammed at 2nd paper feed area, or **[C 34]** when paper is jammed on the Drum.

⑥ If the Paper receiving sensor keeps detecting a paper from one Drum position-A to the next, the machine assumes paper has jammed at paper receiving area and indicates the message **[C 32]**.

7. Print Stop Timing Chart

The TIMING CHART below is identical for both when the printing movement stops automatically by the print quantity count on the Operation panel and when the STOP button is pressed manually.



① When the Paper receiving sensor changes from "detecting" to "not detecting", the count signal is activated and the print quantity display on the Panel is decreased by one count and the Total counter count goes up one count.
If at this time the print quantity display on the Panel becomes zero "0", the print stop movement starts from the next Drum position-A.

② If the STOP key is pressed before the Position-A sensor is blocked, the print stop movement starts when the Position-A sensor is blocked. If the STOP key is pressed just after the Position-A sensor is opened, the Drum rotates one turn until the next Drum position-A before the print stop movement starts.

③ The ON and OFF intervals of the Paper ejection motor change in accordance with the printing speed, which in turn determines the speed of the Transfer belts on the Suction unit.

Main motor speed (Printing Speed)	60 rpm	90 rpm	130 rpm
Paper ejection motor ON interval	20 ms	10 ms	20 ms
Paper ejection motor OFF interval	30 ms	10 ms	10 ms

④ If the Paper receiving sensor does not detect paper when the Drum is at position-A, the machine assumes paper has jammed at second paper feed area or on the Drum and indicates the message **[C 31]** when paper is jammed at 2nd paper feed area, or **[C 34]** when paper is jammed on the Drum.

⑤ If the Paper receiving sensor keeps detecting a paper from one Drum position-A to the next, the machine assumes paper has jammed at paper receiving area and indicates the message **[C 32]**.

⑥ The Main motor stops at Drum angle 272° which equals to the Drum position-B.